TECHNOLOGY NEEDS/OPPORTUNITIES STATEMENT

MORE ACCURATE, QUICKER NDA OF GLOVEBOXES AND HVAC FOR PLUTONIUM HOLDUP

Identification No.: RL-01-017-NM
Date: September 2000

Program: Nuclear Materials Stabilization
OPS Office/Site: Richland Operations Office/Hanford Site
PBS No.: RL-CP03
Waste Stream: TRU Solid Waste
TSD Title: N/A
Operable Unit (if applicable): N/A
Waste Management Unit (if applicable): N/A
Facility: Plutonium Finishing Plant

Priority Rating:

This entry addresses the "Accelerated Cleanup: Paths to Closure (ACPC)" Priority:

____ 1. Critical to the success of the ACPC
____ 2. Provides substantial benefit to ACPC projects (e.g., moderate to high lifecycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays)
_X_ 3. Provides opportunities for significant, but lower cost savings or risk reduction, and may reduce uncertainty in ACPC project success.

Need Title: More Accurate, Quicker NDA of Gloveboxes and HVAC for Plutonium Holdup

Need/Opportunity Category: *Technology Opportunity*

Need Description:

- Description: The NDA of gloveboxes and HVAC for plutonium holdup is needed for inventory control and accountability, as well as planning for D&D activities.

- Background: The activities at the PFP over the next few years are focused on stabilization and disposal, followed by a number of years of D&D activity to take the facility to a "slab on grade" status. Gloveboxes and HVAC will be disposed of in some format, either as-is or after size reduction. The plutonium holdup is a key datum in the disposition activities, for criticality control safety and accountability.

Schedule Requirements: This technology is needed as soon as possible to attain the maximum benefit, but can contribute to cost savings and potential schedule acceleration anytime before FY 2010.

Earliest Date Required: 09/2000
Latest Date Required: FY 2005 or beyond

Problem Description: Current NDA counting of gloveboxes and HVAC is time consuming and not very accurate. Complex assumptions and calculations can be required to accommodate the background and other sources in the vicinity of the desired counting object.

Potential Life-Cycle Cost Savings of Need (in $000s) and Cost Savings Explanation: The cost savings for this technology would primarily be associated with time savings in counting and calculation, and with better planning and perhaps simpler disposition paths for the gloveboxes and HVAC sections. A specific cost savings is difficult to quantify, but a ROM estimate would be between $1 and $10 million, similar to that predicted for better NDA of large burial boxes.

Benefit to the Project Baseline of Filling Need: The disposition of gloveboxes and HVAC sections is required to fulfill the project mission. Quicker and more accurate NDA would result in better assurance of meeting project schedules, with the potential for acceleration of milestones and cost avoidance by less time consuming NDA cycles.

Relevant PBS Milestone: TRP-14-401, Complete PFP Deactivation, 9/30/16

Functional Performance Requirements: Technology to provide NDA measurements of transuranic waste in gloveboxes or HVAC sections must meet standards for accuracy and precision to support criticality safety and accountability criteria. It would also be desirable to determine whether the disposal limits for low level waste versus TRU waste are met in some cases. The method must be effective for a variety of gloveboxes and for HVAC sections, in the presence of potentially interfering sources.

Work Breakdown Structure (WBS) No.:	***TIP No.:***
1.04.05.01.15	N/A

Justification For Need:

Technical: An improved NDA method for gloveboxes and HVAC sections would provide the project with better assurance that D&D goals could be attained, and potentially save both money and time.

Regulatory: None.

Environmental Safety & Health: Accurate accountability assures that criticality requirements are met, and that disposal of the wastes is appropriate for the hazards associated with the transuranic contents.

Cultural/Stakeholder Concerns: None.

Other: N/A

Current Baseline Technology: Portable NDA equipment based on neutron counting techniques are used to determine the amount of plutonium holdup in gloveboxes and HVAC sections.

End-User: Fluor Hanford, Inc., Nuclear Materials Stabilization Project

Contractor Facility/Project Manager: George W. Jackson, Director, Nuclear Materials Stabilization Project, Fluor Hanford, Inc. (509) 373-6622

Site Technical Points-of-Contact: M. W. Gibson, Fluor Hanford, Inc. (FH), (509) 373-4869, Fax (509) 372-0232, email mark_w_Gibson@rl.gov

DOE End-User/Representative Point-of-Contact: A. K. Wright, DOE-RL Material Disposition Division (509) 373-7303, Fax (509) 376-0695, allison_k_wright@rl.gov